

Phippsburg Spatfall Enhancement Project

Introduction

The Phippsburg Shellfish Committee conducted a study of the effects of plastic mesh nets on the recruitment of soft-shell clam spat. The traditional method of enhancing soft-shell clam spat fall has been the placement of pine boughs on clam flats, the theory being that the boughs slow tidal currents over a flat allowing the clam spat to drop out of the water and bury into the sediments adjacent to the boughs. In recent years, a number of municipalities have experimented with placing plastic mesh net over transplanted juvenile clams to protect them from predation. In some of these experiments it was noted that there seemed to be an abundance of natural set occurring within the nets. It has been demonstrated that clams will set preferentially in areas already containing clams, also known as gregarious setting. The question arises as to whether the enhanced setting is due to gregarious setting or that the nets themselves actually enhanced the recruitment by a mechanism similar to the traditional pine boughs. The placement of predator protection nets on the flats independent of transplanted juvenile clams was done to address this question.

Procedure

Plastic netting with a 2mm x 5mm mesh was cut into 8' x 15' pieces onto which eight toggle floats were attached. Two nets were placed on the flats parallel to the tidal flow at four different locations and four nets were placed at one other location. The nets were set in place by digging the edges in approximately 6" to 8". Before the nets were set, the sediment under one of each pair of nets was turned completely by the use of a standard clam hoe. To each net was attached a rope and buoy to mark the location of the net at high water. The nets were set out on June 9th and removed on October 17th. When the nets were removed 1' x 1' x 2" deep sediment samples were removed and sieved; any clam spat were counted and an average size recorded. One sample was taken from a random location under the net, and a sample was taken from a random location at 2' and at 10' outside the net. The net condition and other observations were recorded.

Results

The results are shown in Table 1. In one of the locations, Atkins Bay, no spat were found either inside or outside the nets. In two of the locations, Upper Flats and Thistles, a low number of spat were found, one per square foot under the net with turned sediment in the former, and three per square foot under the net with turned sediment in the latter. Significant numbers of spat were found in the Kelp Shed location; 140 per square foot under the net with turned sediments and 13 under the net with undisturbed sediment; 10 spat per square foot were outside the net. The most spat were found at the Wyman Bay location; 178 under the first net with the undisturbed sediment, 132 under the first net with the turned sediment, 137 under the second net with undisturbed sediment and 98 under the net with turned sediment; numbers of spat out side the nets ranged from 4 to 13 per square foot.

Referring to the Field Data Sheet, it can be seen that for any location where the nets became fouled, very few if any spat were observed. The presence or absence of larger clams under the net did not seem to influence the results significantly.

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FIELD DATA

Location 1

Flat: Thistles in the Basin

Spat Count

Under Net with turned sediments: 3

Under Net with undisturbed sediments: 1

Outside Net at 2': 3

Outside Net at 10': 2

Spat Size

3/16"

"

"

"

Observations: Noticeable number of ribbon worms and one green crab under the net. The net was very fouled with mud and growth. This area used to be dug on a regular basis but the clams have died out.

Location 2

Flat: Kelp Shed in the Branch

Spat Count

Under Net with turned sediments: 140

Under Net with undisturbed sediments: 13

Outside Net at 2': 10

Outside Net at 10': 10

Spat Size

3/8-1/2+ "

3/16

"

"

Observations: Ribbon worms and small green crabs under the net. This area used to be dug on a regular basis but the clams have died out.

Location 3

Flat: Atkins Bay due east of the Tom Percy Residence

Spat Count

Under Net with turned sediments: 0

Under Net with undisturbed sediments: 0

Outside Net at 2': 0

Outside Net at 10': 0

Spat Size

Observations: Several small green crabs under the net. The net was moderately fouled with mud and growth. This area is not regularly dug.

Location 4

Flat: Upper Flats south of the Russell Smith Residence

Spat Count

Under Net with turned sediments: 1

Under Net with undisturbed sediments: 0

Outside Net at 2': 0

Outside Net at 10': 0

Spat Size

Observations: One green crab found in sediment sample inside and outside of the net. The net was severely fouled with mud and growth. The nets were not near the channel but it is a high current area. Large clams were showing. The area is occasionally dug.

Location 5

Flat: Wymans Bay approximately 50-60' from the west channel

Spat Count

Under Net 1 with turned sediments: 132

Under Net 1 with undisturbed sediments: 178*

Outside Net 1 at 2': 13

Outside Net 1 at 10': 7

Under Net 2 with turned sediments: 98

Under Net 2 with undisturbed sediments: 137

Outside Net 2 at 2': 10

Outside Net 2 at 10': 4

Spat Size

Observations: Green crab under net 2. Net was fairly clean. Large clams were showing under and around the nets. This area is regularly dug. *Lost some spat prior to count due to a hole in the sieve.

Table 1: Number of spat in 1'x 1' sample.

Location	Number of Spat			
	Net: Turned	Net: Natural	Out 2'	Out 10'
1. Thistles	3	1	3	2
2. Kelp Shed	140	13	10	10
3. Atkins Bay	0	0	0	0
4. Upper Flats	1	0	0	0
5a. Wymans Bay	132	178	13	7
5b. Wymans Bay	98	137	10	40